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Report on a Collection of Amphibians and Reptiles from Harbel, Republic of Liberia

BY

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The collection of Liberian reptiles and amphibians reported herein has been brought together by Mrs. Dora Weyer, the junior author, while residing at The Firestone Rubber Plantations at Harbel, Liberia. Her husband, Dr. Albert E. Weyer, director of sanitation, has assisted her to some extent in this work.

The collection contains a number of rarities and certain species are regarded as new. Field notes appearing in quotation marks are those of the junior author, sent with the collection.

"All of these specimens come from the main Firestone plantation save one from the Cavalla plantation—very similar ecologically but southeast of Harbel on the Cavalla River.

"Ecologically Harbel is in the heaviest rain-forest in Africa. The soil is a gravelly laterite, with many outcroppings of rocks. The large Du and Farmington rivers curve back and forth through the area and there is a multitude of small rivers and creeks tributary to them fed by water from innumerable swamps. This is an area of low hills rising from the coastal sand plain which edges the plantation seaward and lying between each hill and the next is usually a swamp! In fact, the survey map shows 25 percent of the entire area is swamp.

"Lastly, of interest from an ecological viewpoint, with the exception of certain experimental plots, the river edges, and the cutover swamp lands, the area is covered with dense rubber forest. In the old rubber forest with trees reaching 75 to 90 feet in height, and where most of the collecting was done, the ground cover is pretty

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well limited to grass and ferns which is cut over three or four times a year to keep it low. In the young rubber the ground is densely covered with a kudzulike legume used here for a cover crop; this dies out once the trees get big enough to shade it.

"Ten miles beyond the plantation borders at Kakala the annual rainfall is only 80 inches while farther on at Ganta it drops to 60 inches. Here at Harbel the annual rainfall runs from 150 to 200 inches.

"While there are no extensive serpent cults in Liberia such as have been reported elsewhere in Africa, there are 'snake charmers' or persons who 'play' with snakes.

"The tribes near Harbel have their 'snake men' who handle or 'play' with the snakes. Incidentally, they do not necessarily remove the venom from the poisonous snakes with which they play. I had assumed that they did remove the poison. Recently two 'snake men' were brought into the hospital dead, and the physician, my husband, questioned the people who brought them in. They came from a village near the plantation—a Kepelle village—and both of the deceased were full-fledged initiates. Presumably each 'snake-man' keeps his own poisonous snake either in a basket, in his hut, or loose in the 'bush' behind his hut. When the time comes that he wishes to show his prowess, or more likely force tribute from someone, he goes to the bush and calls his snake. When the snake comes to him he is supposed to ask it whether it wishes to 'play' in the village. Only if the snake agrees may he handle it safely before the people—and this is not done often.

"However in the case in question, the two men together were playing with the snake, a cobra, in the village when suddenly it bit one. The other man instantly took it from the hand of the bitten man, and the snake bit him also. Both died after a short time.

"When questioned by my husband the witnesses answered that they did not think the second man realized that the snake had actually bitten his associate, but had thought that the snake was simply playing, and he merely wanted to handle the snake himself.

"When asked why they thought the men's medicine had not worked they carefully explained two possibilities:

"(1) The snake may not have 'agreed' to play in the village and they took it in spite of this, or (2) the men may not have fully performed the initial rites or may have broken the prescribed taboos, one of which is that they must not have had sexual intercourse for three days previously.

"All this of course is a deadly serious matter to these people. An examination of the snake showed that it retained the fangs. The poison sac was intact and still contained some poison."

LIST* OF AMPHIBIANS AND REPTILES KNOWN TO OCCUR IN THE REPUBLIC OF LIBERIA

AMPHIBIA

GYMNOPHIONIANS

Geotrypes seraphini occidentalis Parker

**Geotrypes angeli* Parker

SALIENTIA

**Xenopus tropicalis* Gray

Bufo regularis regularis Reuss

Bufo regularis maculatus Hallowell

Bufo togoensis Ahl

Bufo camerunensis camerunensis Parker

Hemisus marmoratus (Peters)

Rana albolabris albolabris Hallowell

Rana albolabris parkeriana Loveridge

Rana mascareniensis mascareniensis Duméril and Bibron

Rana bibroni Hallowell

Rana occipitalis Günther

Rana oxyrhynchus oxyrhynchus Smith

Rana oxyrhynchus gribinguiensis Angel

Rana longirostris Peters

**Rana maccarthyensis* Andersson

Rana crassipes alleni (Barbour and Loveridge)

Rana subsigillata A. Duméril

Phrynobatrachus giorgii De Witte

Phrynobatrachus perpalmatus Boulenger

Phrynobatrachus francisci Boulenger

Phrynobatrachus natalensis (Smith)

Phrynobatrachus latifrons Ahl

Phrynobatrachus plicatus (Günther)

Phrynobatrachus alleni Parker

Phrynobatrachus ogoensis brongersmai Parker

Phrynobatrachus liberiensis Barbour and Loveridge

Arthroleptis adolfi-friederici Nieden

Arthroleptis calcaratus (Peters)

Arthroleptis poecilonotus Peters

Arthroleptis taeniatus Boulenger

Arthroleptis werneri Nieden

Arthroleptis guttersus Chabanaud

Cardioglossa decorata Barbour and Loveridge

Cardioglossa liberiensis Barbour and Loveridge

Leptopelis viridis (Günther)

Leptopelis bequaerti (Loveridge)

Leptopelis tessmanni Nieden

* Species occurring in the collection at hand are preceded by an asterisk.

Peptopelis bocagii (Boulenger)
Hylambates hyloides Boulenger
Hylambates cochranae Loveridge
Hylambates leonardi Boulenger
Megalixalus immaculatus Boulenger
Megalixalus fulvovittatus Cope
Megalixalus fornasinii (Bianconi)
Megalixalus platyceps Boulenger
Hyperolius concolor (Hallowell)
Hyperolius puncticulatus Pfeffer
Hyperolius platyceps Boulenger
Hyperolius festivus Barbour and Loveridge
Hyperolius pleurotaenides (Boulenger)
Hyperolius ocellatus Günther
Hyperolius fuscigula Bocage
Hyperolius fusciventris Peters
Hyperolius marmoratus Rapp
Hyperolius picturatus Peters
Hyperolius admetzi Ahl

REPTILES

CROCODILES

Crocodylus niloticus Laurenti **
Crocodylus cataphractus Cuvier
Osteolaemus tetraspis Cope

TURTLES

Eretmochelys imbricata imbricata (Linnaeus)
Chelonia mydas mydas (Linnaeus)
Dermochelys coriacea coriacea (Linnaeus)
Lepidochelys olivacea olivacea (Eschscholtz)
Kinixys homeana Bell
 **Kinixys erosa* (Schweigger)
Pelusios adansonii (Schweigger)
Pelusios † *subniger* (Lacépède)
Amyda tringuis Forskål

AMPHISBAENIANS

Amphisbaena liberiensis Boulenger
Amphisbaena cynisca leucura Duméril and Bibron

SAURIANS

Hemidactylus mabouia (Moreau de Jonnes)
Hemidactylus muriceus Peters
Hemidactylus fasciatus Gray
Lygodactylus thomensis Peters
Lygodactylus gutturalis (Bocage)
 **Agama agama africana* (Hallowell)
Varanus (Polydaedalus) *niloticus niloticus* (Linnaeus)

** The name of an author associated with a scientific name may be regarded as being in the genitive case; hence it would appear that *Laurenti* is the proper form if one inflects the name as is done in the title of certain books.

† *Pelusios derbianus* Gray and *Pelusios nigricans castaneus* Hewitt are placed in the synonymy of *P. subniger* by Mertens and Wermuth 1955. These names have been recognized previously as representing distinct species.

- **Lacerta echinata echinata* Cope
- **Mabuya maculilabris maculilabris* Gray
- **Mabuya blandingii* Hallowell
- Mabuya bensoni* (Peters)
- Riopa durum durum* Cope
- **Riopa fernandi* (Burton)

CHAMAELEONS

- **Chamaeleon senegalensis* Daudin
- Chamaeleon gracilis gracilis* Hallowell

SERPENTS

- **Typhlops leprosus* sp. nov.
- **Typhlops punctatus punctatus* Leach
- Typhlops manni* Loveridge
- Python sebae* Gmelin
- **Calabaria reinhardti* (Schlegel)
- **Neusterophis variegatus* (Peters)
- **Natrix anoscopus anoscopus* (Cope)
- **Natrix firestonei* sp. nov.
- Lycophidion fasciatum* Günther
- **Bothrophthalmus lineatus lineatus* Peters
- Boaedon olivaceus* (Duméril)
- **Boaedon lineatus virgatus* (Hallowell)
- **Boaedon lineatus lineatus* Duméril, Bibron, and Duméril
- **Hormonotus modestus* Duméril, Bibron, and Duméril
- Chlorophis irregularis* (Leach)
- **Chlorophis heterodermis* (Hallowell)
- Phylothamnus nitidus* (Günther)
- Gastropyxis smaragdina* (Schlegel)
- Mehelya guirali* (Mocquard)
- **Mehelya poensis* (Smith)
- Coronella coronata* (Schlegel)
- Hapsidophrys lineata* Fischer
- Grayia smythii* (Leach)
- Rhamnophis aethiopissa aethiopissa* Günther
- Thrasops flavigularis* (Hallowell)
- Dasypeltis scaber* Linnaeus
- Dasypeltis macrops* Boulenger
- Crotaphopeltis hotamboeia hotamboeia* Laurenti
- Crotaphopeltis duchesnii guineensis* (Chabanand)
- Boiga pulverulenta* (Fischer)
- **Boiga blandingii* (Hallowell)
- **Psammophis sibilans phillipsi* Hallowell
- **Thelotornis kirtlandii kirtlandii* (Hallowell)
- Miodon acanthias* (Reinhardt)
- Apparallactus lineatus* Peters
- **Apparallactus modestus* (Günther)
- Dendroaspis viridis* (Hallowell)
- Dendroaspis jamesonii* (Traill)
- Naja nigricollis* Reinhardt
- Naja goeldii* Boulenger

- **Naja melanoleuca* Hallowell
 - **Atractaspis corpulenta* (Hallowell)
Atractaspis irregularis Reinhardt
 - **Causus rhombeatus* (Lichtenstein)
Causus lichtensteini (Jan)
 - **Bitis gabonica* Duméril, Bibron, and Duméril
 - **Bitis nasicornis* (Shaw)
Atheris chlorechis (Schlegel)
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REPORT ON THE COLLECTION

Geotrypetes angeli Parker

Geotrypetes angeli Parker, Zool. Meded. Leiden, vol. 19, 1936, pp. 100-101 (type locality Labé, French Guinea, Africa); Loveridge, Proc. New England Zool. Club. vol. 17, May 20, 1938, p. 65, (Sanoquelle, near Santa, Liberia).

Although this species is described in Parker's paper on "The Amphibians from Liberia and the Gold Coast," it would seem that it is known from neither territory. It is presumed that Loveridge's record represents the first report of the species for Liberia.

Two specimens are at hand, EHT-HMS Nos. 31927, 31928 from Harbel, Liberia. They yield the following data: (the heads of both, and the tail of one, have been somewhat injured. The count here given of the grooves and teeth, if not actual, are very close to the actual number.)

No. 31927. Eye distinct; snout elongate, projecting considerably beyond lower jaw; distance between eye and mouth contained nearly three times in distance between eye and nostril; tentacle below nostril nearly midway between nostril and lip; a total of 31 maxillary-premaxillary teeth, the posterior smallest; about 34 vomeropalatine teeth, the posterior much the smallest; dentary series 28; splenial series 18. In No. 31928 the maxillary-premaxillary teeth are 29; vomeropalatine 34; dentary series 24, splenial series 20.

The general color (in preservative) is lavender-purplish to violet. Most of the grooves are grayish white, and the head is somewhat lighter, perhaps somewhat olive in life.

Measurements in mm. (of 31927, 31928 respectively): Total length 279, 202; head length, 12.2, 9.2; distance between eyes, 4, 3.3; eye to tip of snout, 4.15, 4; eye to nostril 3.5, 3; eye to lip, 1.25, 1.05; greatest diameter of body, 10, 5.

The hidden scales begin somewhere on the anterior two fifths of the body. At first they are minute and usually to be discovered at the upper end of the primary grooves. At the beginning of the secondary grooves they are of larger size and cover much of the space

between the primary and secondary grooves; the scales anteriorly are much longer than wide, farther back they may be nearly as wide as long. The greatest measurement is always transverse.

Xenopus tropicalis (Gray)

Silurana tropicalis Gray, Ann. Mag. Nat. Hist., ser. 1, vol. 14, 1864, p. 315; and Proc. Zool. Soc. London, 1864, p. 458. (type locality, Lagos).

Xenopus tropicalis Parker, Proc. Zool. Soc. London, April 16, 1936, p. 156 (distinguishing characters); Loveridge, Proc. U. S. Nat. Mus., vol. 91, 1941, p. 124, (Gibi and Bromley, Liberia).

A young specimen, EHT-HMS No. 31948 (snout to vent 29 mm.) is from Harbel, Liberia. The head is much more depressed than the figures presented by Parker (*loc. cit.*) show but this may be due to the youth of the specimen.

Rana maccarthyensis Andersson

Rana maccarthyensis Andersson, Arkiv. Zool., vol. 29A, no. 16, 1937, p. 9, figs. 3-4 (type locality, McCarthy Island, Gambia); Loveridge, Proc. U. S. Nat. Mus. vol. 91, 1941, p. 136 (specimens from Gibi and Bellyella, Liberia).

One specimen, EHT-HMS No. 31947, Harbel, Liberia. Loveridge had certain specimens in which the legs were reported as being longer than those in the type. In this specimen the tibiotarsal articulation reaches the nostril. Both inner and outer metatarsal tubercles are present, the latter connected by a row of low tubercles with the posterior subarticular tubercle of the fourth toe; vocal sacs external, opening through a slit on each side of the throat; the vocal sacs are black and the slits are parallel to each other extending posteriorly toward the "lower insertion of forearm"; three or four longitudinal folds on each side of dorsum, the longest extending more than half the length of body. The tympanum is longer than high, its greatest diameter equals four fifths or more of the length of the eye-opening. Three large palmar tubercles, the outer elongate; the posterior subarticular tubercles of fingers very large.

There are two longitudinal series of white dots more or less connected on front and back of thigh, and a broad median light stripe present.

Kinixys erosa (Schweigger)

Testudo erosa Schweigger, Prodr. Monog. Chelon., 1814, p. 52.

Kinixys erosa Schmidt, Bull. Amer. Mus. Nat. Hist., vol. 39, 1919, pp. 403-406, Map-3, pl. XI, fig. 1. (bibliography).

A single specimen EHT-HMS No. 31938 is from Harbel, Liberia. The specimen is young, the greatest over-all length of the carapace being only 145 mm. While the hinge of the carapace is scarcely evident to the eye, the carapace is closely pressed against the plas-

tron behind. The denticulation is strongly marked along the flaring anterior edge of the carapace, some scutes bearing two or more denticulate projections. The lateral marginals have single serrations, the posterior ones have a scalloped appearance.

There are four claws on the hind foot, five on the fore foot.

Agama agama africana (Hallowell)

Tropidolepis Africanus Hallowell, Proc. Acad. Nat. Sci. Philadelphia, 1844, p. 171 (type locality, Liberia).

Agama agama africana Loveridge, Proc. U. S. Nat. Mus., vol. 91, no. 3128, 1941, p. 116 (Bellyella, Bendaja).

A single young and two adult male specimens, EHT-HMS No. 31926, 31943, and 31944, from Harbel, Liberia, are in the collection. The number of preanal pores ("callose preanal scales") situated on the border of the vent are 12, 12, and 11, respectively.

Lacerta echinata echinata Cope

Lacerta (Zootaca) echinata Cope, Proc. Acad. Nat. Sci. Philadelphia, 1862, pp. 189-190 (type locality West Africa [probably Liberia, *vide* Loveridge *loc. cit.*]).

Lacerta echinata Barbour and Loveridge, in Strong Contr. Dept. Trop. Med. and Inst. Trop. Biol. Medicine No. 5, vol. 2, 1930, p. 776. (Plantation 3, Du River).

Lacerta echinata echinata Loveridge, Proc. U. S. Nat. Museum, vol. 91, No. 3128, 1941, pp. 116-117 (Harbel).

A single specimen, EHT-HMS No. 31924, has the following characters:

Part of rostral visible above as long as the median suture between the anterior nasals; frontonasal longer than wide, touching the anterior loreal laterally; prefrontals longer than wide, their common suture less than half their greatest length, touching both loreals, the anterior supraocular, and the anterior supraciliary; frontal approximately one-third longer than wide; frontoparietals nearly as large as prefrontals but with a longer median suture, touching two supraoculars; parietals longer than wide, each with an irregular longitudinal ridge or keel the outer posterior part of the scales depressed; a well-defined postinterparietal; nostril surrounded by rostral (narrowly), first labial, posterior and anterior nasals; five (four) supralabials precede the large subocular; latter followed by a large,—and one or two very small, supralabial scales; seven or eight infralabials; a large mental scale with a labial border much greater than that of the rostral; three pairs of much enlarged chinshields the anterior pair forming a median suture, second pair narrowly separated anteriorly, third pair separated by ten or more rows of small

scales; third chinshield followed behind by two scales. Three supraoculars, the third one-third or one-fourth times size of the first and second; a row of 10 supraciliaries, the first and last largest; about 12 rows of keeled temporal scales in preauricular area; tympanum oval, much higher than wide; scales on neck and body small, strongly keeled, the keels in nuchal region parallel to body, those on side of body running up and back, the keels diagonally placed on the individual scales.

Venter covered by six longitudinal rows of large scutes in about 32 transverse rows. The median rows are slightly the smallest, the rows adjoining these largest, the outer series somewhat intermediate, and in turn bordered by a row of scales somewhat larger than the lateral body scales; scales on underside of neck small with a distinct collar of larger scales, which may be preceded by one or two enlarged scales. Anal scale large, bordered on sides and posteriorly by two rows of scales; 10-11 femoral pores.

Tail above and below with sharply keeled scales, those near the base—between the tenth and twentieth whorls—with longer mucrones extending from the posterior part of the keels; a row of five or six enlarged keeled scales on outer face of upper arm more or less continuous with a series of ten on front face of forearm; a similar series on front face of femur and on tibia, the series being largely ventral; other scales on limbs variable in size; subdigital scales not strongly keeled.

Color (in preservative): Top and sides of head nearly uniform blackish; body generally dark grayish-black with transverse gray-lines crossing neck and extending down to near the ventral surface; on body the transverse markings are less distinct, rarely continuous, often consisting of four or more tiny gray spots; tail dark with extremely narrow vertical lines of white, the upper ones often alternating with those low on sides of the tail; chin and large scutes of belly lighter, but with considerable pigment, becoming blackish on the two outer rows of scutes.

Measurements in mm.: Snout to vent, 76; tail 203; total length, 279.

Remarks: The original description by Cope varies somewhat from the description given here but this may be due, at least in part, to a different terminology. The color, as given by Cope is: "Above bluish-green with about fifteen blackish cross bands; those upon the nape and rump are narrow, the others broad, dark bordered. Beneath yellowish. Head shaded with yellowish."

Whether this pattern is essentially different or has been modified in preservation cannot be stated at this time.

We have followed Loveridge in using the trinomial, although there may be some doubt that *Lacerta langi* Schmidt is actually a subspecies of this form.

Mabuya blandingii (Hallowell)

Euprepis Blandingii Hallowell, Proc. Acad. Nat. Sci. Philadelphia, 1844, p. 58 (type locality, Liberia).

Mabouia raddonii Gray, Catalogue of the specimens of lizards in the collection of the British Museum, 1845, p. 11 (type locality, West Africa); Boulenger, Catalogue of the lizards in the British Museum, 2nd ed., vol. 3, pp. 165-166, pl. 10, fig. 1 (includes *blandingii* as a synonym).

Mabuya blandingii Loveridge, Proc. U. S. Nat. Mus. vol. 91, no. 3128, 1941, p. 117. (Gibi, Bromley, Bendaja, Harbel).

There are several mabuyas in the collection (EHT-HMS Nos. 31930, 31931, 31934, 31937) which are in bad condition (having been dried). It is thus practically impossible to ascertain relative lengths of limbs or to discern clearly original markings and coloration. It would appear that more than a single species is indicated. Some of these certainly belong to *blandingii*, however, all are included here. Loveridge (*loc. cit.*) has indicated that he believes the variation is considerable, and places all twelve specimens, examined by him, in this species.

All of our specimens have a lateral white line. Two are characterized by having the frontal touching only the two anterior supraoculars, with the prefrontals widely separated by the junction of the frontal and the frontonasal. There are 30 scalerows about the body. The body scales are 3-keeled, or the outer parts of the scale may have also a tubercle. The scales in the median nuchal region may have four normal keels and the two nuchal scales are not or but dimly keeled. Two other specimens have the frontal touching only the second and third supraoculars, the body scales are 3-keeled, but the nuchal scales may have five or seven keels and the nuchals 12 or 13 distinct keels. There are 30 scalerows about the body. Another specimen has the frontal touching the first, second, and third supraoculars, and there are 30 scalerows present.

Mabuya maculilabris maculilabris (Gray)

Euprepis maculilabris Gray, Catalogue of the specimens of lizards in the collection of the British Museum. 1845, p. 114.

Mabuia maculilabris Boulenger, Catalogue of the lizards in the British museum (Natural History). 2nd ed., vol. 3, 1887, pp. 164-165, pl. 9, fig. 2.

EHT-HMS No. 31933 in the collection from Harbel, Liberia, has the following characters: internasals injured, presumably minutely

separated; frontonasal broader than long; prefrontals forming a median suture, in contact with first and second supraoculars; frontal slightly longer than its distance from the tip of the snout, shorter than the median combined length of parietals; two frontoparietals; an interparietal enclosed by the parietals, which are wider than long; a pair of nuchals (nearly smooth, only back edge suggests keeling); nostril almost directly above suture between rostral and first labial; a distinct postnasal, in contact with first labial (or also very narrowly with second on one side); two loreals the posterior largest, the anterior barely touching a labial on one side; two pre-suboculars; a transparent eyelid disc; six or seven supraciliaries; four supraoculars, frontal touching only second and third; seven supralabials, the subocular supralabial, the fifth, nearly double width of two preceding; eight infralabials; two primary, three secondary temporals; four postoculars.

Arms and legs well developed, the toes reaching the elbow of adpressed arm; subdigital lamellae without distinct keels or spines; 33 scalerows around neck; 32 around middle of body, most of the body scales having five distinct keels, some of those on neck behind parietals with seven or eight; ear bordered anteriorly by four irregular denticulations; 12 ventral rows of scales smooth; tail regenerated, with 85 subcaudals, the regenerated scales wider than the original scales, which are also distinctly wider than other adjoining scales; scales on limbs often tricarinate; anal scales scarcely, or not, larger than the scales which precede them.

Color in preservative: Above brown or olive brown; a distinct brown band from snout through eye to groin covering three or three and a half scalerows; a whitish line on supralabials involving lower part of ear continued to a point somewhat past arm insertion; no white line on side below brown band: tail generally olive; chin, venter, and underside of tail whitish.

Measurements in mm: Snout to vent, 74; tail, 127; head length, 18; head width, 13; arm, 22; leg, 32; axilla to groin, 35.

A second specimen EHT-HMS No. 31932 agrees with the preceding specimen in having the prefrontals in contact, the interparietal enclosed by the parietals, the supranasals minutely separated, and the frontal touching the second and third supraoculars. There are 31 scalerows around the middle of the body; a lateral brown stripe is present on the side and there is no lateral white stripe bordering it below. The labial markings in the two specimens are nearly identical.

Riopa fernandi (Burton)

- Tiliqua fernandi* Burton, Proc. Zool. Soc. 1836, p. 62 (type locality, Fernando Po); Peters Monatsb., Akad. Wiss. Berlin, 1874, p. 372.
Plestiodon harlani Hallowell, Proc. Acad. Nat. Sci. Philadelphia, vol. 2, 1845, p. 170.
Euprepis striata Hallowell, Proc. Acad. Nat. Sci. Philadelphia, vol. 7, June 1854, p. 98 (type locality, Liberia); Trans. Amer. Philos. Soc., ser. 2, vol. 11, 1857, p. 74, pl. 3, fig. 1.
Euprepis harlani Hallowell, Trans. Amer. Philos. Soc., ser. 3, vol. 11, 1857, p. 75, pl. 3, fig. 2.
Lygosoma fernandi Boulenger, Catalogue of the Lizards in the British Museum, 2nd Ed. vol. 3, 1887, pp. 304-305.

A specimen, EHT-HMS No. 31942, is from Centersite in River Area, Harbel, Liberia, Dec. 20, 1950; Dr. A. E. Weyer collector.

The following characters obtain: rostral presenting a curved convex posterior edge, length of part visible above considerably greater than length of the common suture between the internasals; *paired frontonasal*, both scales broadly in contact with the frontal, in contact laterally with the anterior loreal; prefrontals small, separated from each other by a distance nearly equal to the width of one of them; in contact laterally with both loreals, posteriorly touching the anterior supraocular and anterior supraciliary; frontal widened anteriorly, narrowing posteriorly almost to a point, more than a third longer than its distance from the tip of snout, equal to or greater than the combined length of the parietals; four supraoculars, two bordering the frontal; frontoparietals form a common suture of less than half their length, larger than the interparietal, which with a scale posterior to it, separates the parietals; latter scales much broader than long. Nine supraciliaries, first and last largest; nostril in a divided nasal; no postnasal anterior loreal narrower than posterior and slightly higher; a preocular superimposed above the anterior of two presuboculars; a row of seven or eight suboculars separating labials from the semitransparent scaled lower eyelid; seven supralabials the fifth and sixth below eye; two primary temporals bordered behind by four secondary temporals; a pair of somewhat enlarged scales border parietals behind; ear distinct, oval tympanum deeply sunk, bordered anteriorly within depression by two scales with rounded edges; seven infralabials; mental with a larger labial edge than rostral; undivided postmental touching two labials laterally; first chinshields in contact, second pair separated by a scale; third pair reduced each separated from its fellow by five scales.

Limbs pentadactyle, rather short, when adpressed they fail to meet by a distance equal to width of two scalerows; subdigital

lamellae on fingers simple, short, with a suggestion of a median keel or ridge, 10 under fourth finger; palm covered with smooth rounded, but somewhat raised scales; toes short, the fourth with 16 lamellae bearing irregular longitudinal keels or ridges; sole covered with scales similar to those on palm, the posterior row bordering a row of enlarged scales; no axillary or inguinal depressions or pockets; 33 scalerows about narrowest point of neck, 34 about middle of body; four preanal scales, not or scarcely larger than the scales preceding them; median subcaudals, 87, not wider than adjoining scales; scales from parietal to above vent, 56. All dorsal and lateral scales (except head scales and temporals) with three well-defined keels, the two outer strongest; also rarely, a lateral ridge or tubercle can be seen on scales; scales on lower posterior face of thigh with two tubercles. Venter brownish white, each scale outlined in light brown. On underside of chin and sides of neck some scales are edged with dark brown, forming brown lines on the edges of several rows of scales on the neck. Head nearly uniform dark brown on dorsum, lighter laterally, a black moon-shaped spot below and behind eye.

Color: The ten dorsal scalerows woodbrown, each scale bordered by black leaving the dorsal surface with uniform rows of equal-sized pentagons; the outer scales of the ten may be lighter brown and their outer sides come into contact with a series of black lateral spots or bars; these tend to fuse together on the side of the neck and above the arm to form an elongate, but irregularly edged spot; along the side of the body are eight or nine vertical or somewhat diagonal bars of black, often irregular, sometimes two in contact above or below; scales between bars brownish but lighter than those on the back; lateral caudal scales lighter than those on sides of body with indefinite darker areas dorsally and laterally to the tip; however, towards the latter third the dark scales predominate and there appears a series of bluish-white spots. These whitish spots (in certain lights) can be discerned nearly to the base of the tail but there is small contrast with the other light scales.

Measurements in mm.: Snout to vent, 104; tail, 132; length of head, 21; width of head, 16; snout to arm insertion, 32; axilla to groin, 56; arm, 25; leg, 305.

Remarks: This species may be somewhat aquatic, individuals having been seen to enter shallow water in the rivers. It seems extremely doubtful, as has been proposed, that this is a subspecific form of *Riopa durum* Cope.

Chamaeleon senegalensis Daudin

Chamaeleo senegalensis Daudin, Histoire naturelle générale et particulière des reptiles, vol. 4, 1802-03, pp. 203-209 (type locality, Senegal).

Chamaeleon senegalensis J. E. Gray, Proc. Zool. Soc. London, 1864, p. 471.

A single young specimen is at hand, EHT-HMS No. 31925.

Typhlops leprosus sp. nov.

Type: EHT-HMS No. 31895 Firestone Plantation, Harbel, Liberia, Africa; 1954, collected by Mrs. Dora Weyer.

Diagnosis: A presumed small species having a length of at least 185 mm. the width in length 23-25 times. A preocular present; no subocular; four supralabials; nasal divided, *the suture arising from the lower outer edge of rostral*; gray-white to yellowish, with irregular transverse markings of black and yellowish; 28 scalerows around body at middle, 30 scalerows around body 3 cm. back of snout tip. Scales from mouth to vent 388.

Description of type: Snout prominent, its lower edge with a blunt transverse keel, not hooked; eye clearly visible, the pupil distinct covered by ocular and posterior edge of preocular; rostral large its greatest width 3.4 mm., much less than width of head at level of eyes (5.6 mm.), its posterior edge truncate rather than rounded; prefrontal about 3.5 times wider than long, separating the nasals dorsally; supraoculars minute, touching frontal; latter small, separating the somewhat larger parietals; upper part of nasal reaching to level of middle of eye, widened ventrally the nasal suture arising from lower part of rostral, dividing the scale into two parts; preocular touching second and third supralabials, separated from the supraoculars; part of rostral visible below, much wider than long; ocular touching two labials, the area surrounding eye uniformly light; four scales border it behind, between the fourth labial and the parietal; mental not twice as broad as deep; two infralabials; 30 scalcrows around neck; 28 around middle of body; 20 in front of vent; ventral scales from mouth to vent 388; subcaudals, 8 + 1.

Color: Above gray-white to yellowish with top of head and anterior part of neck dark; neck and body blotched with irregular black spots separated by irregular light yellow areas. All the black scales have a grayish center and these form dim lines of gray through the black but are interrupted by the yellowish blotches between the black areas. Those on the median rows are as distinct as those on the lateral regions. The 15 to 17 ventral rows largely yellowish, with smaller and fewer black blotches, and the light areas in each scale larger.

"Color in life: Surface translucent so that the body is grayish flesh. All pigmented areas are black. The spots on the scales, that give a striated appearance, are gray."

Measurements in mm: Total length, 185; tail, 3.7; width, 3 cm. from tip of snout, 7.6 width at middle 7.8; width into length, 237—25.6 times.

Remarks: The relationship of this form does not seem to be with the other known local species. It differs in the peculiar coloration and in having the nasal completely divided and the nasal suture arising from the rostral. This latter character is known in *anchietae* a form described from S. W. Africa. This, however, has 30-32 scales round the body, and is pale yellow with grayish brown blotches. The nasal is semidivided and the preocular touches only one labial. The length is 119 mm.

Another species that may be related is *Typhlops anomalus* also described from Southwest Africa. This has 28 to 30 scales around the body; however, this species is uniform brown above, the sides and lower parts yellow. The nasal suture arises from the rostral but the scale is only partially divided.

Typhlops manni Loveridge, *Typhlops leucostictus* Boulenger, and *Typhlops punctatus punctatus* (Leach) also are known to occur in Liberia.

It is possible that this form has been described and is to be found among the synonyms of *punctatus*. We believe, however, that the origin of the nasal suture is sufficiently significant to have been recorded, if it were present in any of the forms described. The number of ventral scales is 34 more in *punctatus* from Harbel.

Typhlops punctatus punctatus (Leach)

Acontias punctatus Leach, in Bowditch, Mission, Ashantee, 1819, p. 493 (type locality, Fantee).

Typhlops punctatus Boulenger, Catalogue of the Snakes in the British Museum, vol. 1, 1893, pp. 42-43 (*part.*) ("total length 630 mm."); Schmidt, Bull. Amer. Mus. Nat. Hist., vol. 49, 1923, pp. 45-46; Barbour and Loveridge, in The African Republic of Liberia and the Belgian Congo, edited by Richard P. Strong; Cont. Dept. Trop. Med. Inst. Trop. Biol. Med., no. 5, vol. 2, 1930, pp. 770-772.

Typhlops punctatus punctatus Loveridge; Proc. New England Zool. Club, vol. 17, May 20, 1938, p. 55 (Ganta, R. L.).

Onychocephalus Liberiensis Hallowell, Proc. Acad. Nat. Sci. Philadelphia, 1848, p. 59 (type locality, Liberia).

A single specimen, EHT-HMS No. 31890 ♀ has the following characteristics: head much narrower than body, the snout with a very obtuse horizontal keel; nostrils inferior not visible from above; rostral large, the part visible from below much wider than long,

the part visible above two thirds of the width of the head at eye, its posterior edge reaching the front level of eye; latter can be distinguished; nasal narrowed above, much widened below, semi-divided, the suture arising from the first labial, scarcely reaching beyond nostril; the preocular present much narrower than the nasal, somewhat narrower or nearly equal to the ocular, in contact with the second and third supralabial; supraoculars elongate, diagonal, not covering any part of eye, separated from each other; prefrontal three times as wide as long; parietals barely differentiated in size from surrounding scales; frontal smaller than the scale following it; four supralabials; mental twice as wide as long, with two infralabials on each side, concealed when mouth is closed.

The diameter of body at middle is contained in length 22 times; diameter of neck (three centimeters behind head), in length, about 34 times; tail broader than long, the upper part rather sharply deflected downward, the under part slightly turned upward, and ending in a sharp low spine. There are 28 scalerows around body; 30 around neck a centimeter behind tip of snout; scales from mouth to vent, (ventral count) 422; subcaudals, 11 + 1; vent bordered by six scarcely differentiated preanal scales.

Measurements in mm.: Total length, 543; tail length, 10; width of body near middle, 25; three cm. behind tip of snout, 16; width of tail at vent, 15; width of head at back of ocular, 11.

Color: Above generally blackish brown, each scale largely transparent, and showing a dim whitish transverse mark near its middle. These light areas become larger on the sides, some being contiguous and tending to form light lines. The dark brown color forms rows of dots on upper part of sides but lower they become fewer, and the four to six ventral scalerows are uniformly yellowish save for an occasional brown dot. The general impression is a brown snake with ten or twelve lighter lines very dim medianly, but becoming well defined laterally.

Remarks: The stomach contents consisted of recently ingested ant eggs with occasional ants. The mouth contained two ant heads with the mandibles fastened to the mouth tissues.

This species reaches a length of about 800 mm., and is probably the largest species of the genus *Typhlops*.

Loveridge (1938) reports a specimen measuring 795 mm. long, 4 inches in circumference and one and one-fourth inches in diameter, from Ganta, Liberia.

Calabaria reinhardtii Schlegel

Eryx reinhardtii Schlegel, Bijdr. tot Dierk., vol. 1, 1848, p. 2, pl. (type locality, Gold Coast).

Calabaria fusca Gray, Proc. Zool. Soc. London, 1858, p. 154, pl. 14 (type locality, Old Calabar, Southern Nigeria, W. Africa).

Calabaria reinhardtii Boulenger, Catalogue of the snakes in the British Museum, vol. 1, 1893, p. 92, ("Liberia to the Congo"); Proc. Zool. Soc. London, 1919, pts. 3-4, Feb. 1920, p. 274; Stull, Proc. Boston Soc. Nat. His., vol. 40, no. 8, p. 396; Barbour and Loveridge, Cont. Dept. Trop. Med. Inst. Trop. Biol. Med., no. 5, 1930, p. 772 (Paiata, St. Paul's River, Liberia).

Two specimens of this burrowing boid serpent, EHT-HMS Nos. 31887 ♂—31888 ♀ from Harbel, Liberia, are at hand. The characters of No. 31887 follow: the rostral is about as wide as high the part visible above about as long as wide; this scale followed by three paired scales wider than long, the first two in contact mesially, the third separated by a small scale; two supraoculars, frontal and parietals considerably broken; nostril in a single nasal, not or only partially divided, followed by a rather large loreal (a small scale segmented from the third median pair forms a second superimposed "loreal" on one side); one preocular, two postoculars (one only on right side); two or three anterior temporals; supralabials, 7-8, the third and fourth bordering orbit; infralabials, 9-10, the first three touch the small anterior chinshields, the first pair in contact mesially; second chinshields not distinguishable from the chin scales, of which there are seven rows between the chinshields and the first ventral. Scales smooth, with formula, 31 head, 25 neck, 29 middle, 23 (24) anterior to vent; ventrals 221, anal single, subcaudals 1 pair, + 19 single + 1 single terminal. The tail is blunt.

Color: Above lavender brown with many scattered lighter scales or groups of scales; entire head and first part of neck blackish; upper part of latter half of tail black; venter largely cream-white with some small black marks.

Measurements in mm., of Nos. 31887 and 31888 respectively: total length, 822, 728; tail, 62, 56; head width, 17, 14; width of neck, 19, 15; greatest width of body, 30, 24; width of tail (at 15 mm. from tip), 21, 16.

Remarks: "Very common here, usually seen crossing road of the house areas at night or in the early morning especially at the beginning of the dry season. One was found dead on the cement air-strip curled in a typical manner and only recently dead. Since it appeared uninjured we surmised it was unable to burrow into the cement and the hot sun had killed it.

"We kept one alive for a while. It was very gentle and my young daughter often carried it about. It always curled in a ball with the head carefully tucked in the center, but the tail was left poking out as though it was the head, and could fool anybody. When it was put down it remained motionless for ten minutes or so, then would cautiously uncurl and very slowly move away to escape. Obviously it was incapable of fast movement. The muscles are so strong that it was very difficult to unroll it by force. It never hissed, threatened, or thrashed about.

"There are two color phases in life represented by the two specimens. (1) Dorsal color dark brown with individual scales or small groups of scales medium brown or tan; ventral surface with cream mottling, spotted with medium brown. (2) dark brownish purple, the markings orange or orange shaded purple. Particularly toward the posterior part, the orange is very bright and striking both dorsally and ventrally.

"The amount of light color on the tail varies a great deal in the species, many specimens I have seen showing none, others much."

If the preserved specimens are removed from alcohol into the air for as short a period as five minutes, the entire ventral surface changes to a uniform paper-white color and certain of the scales adjoining them also assume this color!

The limb remnant is terminated by a sharp protruding claw.

Variation: The smaller specimen has 226 ventrals, an undivided anal, and the subcaudals as follows: one divided pair followed by 24 unpaired scales.

There is a small intercalated scale between the second and third infralabials bordering lip, that is absent in the smaller specimen. The posterior infralabials in both appear to be segmented from the adjoining scales. The smaller female specimen has two postoculars on each side, and has no trace of the limb externally.

Neusterophis variegatus (Peters)

Mizodon variegatus Monatsb. Akad. Wiss. Berlin, 1861, p. 358. (type locality, Pel, Gold Coast, Africa)

Neusterophis variegatus Loveridge, Proc. U. S. Nat. Mus. vol. 91, no. 3128, 1941, p. 120. (Gibi, Bromley, Bendaja, in Liberia)

A single specimen, EHT-HMS No. 31918 has the following characters all included in the known variation: length of eye equal to distance between eye and tip of snout; scalerows, 15, 15, 15; ventrals, 130, subcaudals (divided), 76; anal divided; scales smooth, lacking apical pits; temporals 1 + 2; preoculars, 2-1; postoculars,

3, supralabials, 8, the fourth and fifth bordering orbit; nasal divided; loreal higher than wide; infralabials, 8-9, the last small, four touching the anterior chinshields, which are much shorter than the second pair. There are 24 maxillary teeth (counting missing teeth).

On middle scalerows dark brown, each scale with indefinite lighter flecks; on each side a row of whitish dots, none as large as a single scale, each separated longitudinally from nearest dot by about two scale-lengths; lower scalerows marked like those on dorsum; median half of venter yellow with the outer fourth of each ventral bearing a regular quadrangular dark spot, usually a little darker than body color; median subcaudal area similar to median ventral area; labials yellowish, the sutures edged with black.

Natrix anoscopus anoscopus Cope

Tropidonotus anoscopus Cope, Proc. Acad. Nat. Sci. Philadelphia 1861, p. 299; (type locality, Cuba, *ex errore*).

Natrix anoscopus Cope, Proc. U. S. Nat. Mus., vol. 14, 1892, p. 673.

Natrix aniscopus aniscopus Loveridge, Proc. U. S. Nat. Mus., 1941, pp. 118-110 (Gibi, Bendaja, Harbel, Paiata, R. L.).

Tropidonotus ferox Günther, Ann. Mag. Nat. Hist., ser. 3, vol. 12, p. 355, pl. 6, fig. F (Fernando Po.).

Helicops gendrii Boulenger, Ann. Mag. Nat. Hist., ser. 3, vol. —, 1910, p. 512 (French Guinea).

Natrix aniscopus gendrii Loveridge, Proc. U. S. Nat. Mus., 1941, pp. 118-119.

Loveridge has recognized two subspecies, *aniscopus aniscopus* and *aniscopus gendrii* but suggests that the form on Fernando Po described as *ferox* could not be given subspecific rank. In the collection at hand there is a *Natrix* that agrees in very considerable detail with Günther's figure of *ferox* but differs from that form in having the lateral markings absent, the color being a dull grayish-brown, without lateral black spots. There are no lines of spots on the venter which is orange-tan, each scale edged anteriorly with a blackish line.

It would appear probable that this is a subspecific form of *ferox* [= *anoscopus*] but it must be very doubtful that it represents the typical form *anoscopus anoscopus*, a species having, presumably, an erroneous type locality "Cuba."

The specimen at hand is EHT-HMS No. 31893 ♀, from Harbel, Liberia. It has the following characteristics: the part of rostral visible above more than a narrow transverse line; a pair of small internasals only minutely longer than wide; prefrontals wider than long, a little shorter than internasals; frontal short, scarcely longer than wide, slightly less than its distance to tip of snout, distinctly

shorter than parietals; nostril in a single nasal, an entrant suture from first labial partially divides the scale but does not reach nostril; loreal longer than high; two preoculars, two postoculars, three or four suboculars; supraoculars slender; temporals, 1 + 2 + 4; supralabials, 9-9, none entering orbit; infralabials, 10-10, five bordering first pair of chinshields, which are smaller, but equally as long as the posterior pair. Scale formula, head 35, 23, 25, 25, 20; all scales strongly keeled with apical pits; ventrals, 141; anal, divided; subcaudals, 68. The ventral preceding the anal pair is divided; a small intercalated scale also present between this and the anal pair.

Color: "In life entire dorsal surface dull grayish-brown; no black lateral markings; there are a few small lateroventral black flecks low on the side near ventrals; ventral color orange-tan each scale bordered anteriorly with a dark transverse line; subcaudals gray."

The top of the head is uniform olive to gray brown, the edges of the upper labials being somewhat darker; infralabials and the scales and shields on chin and throat edged with gray; occasionally there may be a tiny black border on outer edge of ventrals.

Measurements in mm: Total length, 524; tail, 131; width of head, 14; length of head, 20; narrowest neck width, 11.4; length of frontal, 4.5; width of frontal, 3.5.

Remarks: This group of *Natrix* has a deep groove between the labials and temporals, which is more or less continued between labials and the suboculars and loreal. In the groove one finds a narrow expanse of gray skin when the labials are pulled down; when seen from above the posterior upper part of labials form a tiny shelf.

"The specimen was caught while we were tearing down a fish pond. It was taken with a two and one-half inch *Tilapa* (a pond fish) in its mouth."

Natrix firestonei sp. nov.

Type: EHT-HMS No. 31894 Harbel, R. Liberia, Mrs. Dora Weyer collector, 1956.

Description of type: Rostral twice as broad as high, visible above as a line; internasals narrowed anteriorly, much longer than wide; prefrontals shorter and wider than the internasals; nostril in a single nasal, with a small suture entering the scale from the first labial but not reaching nostril; loreal longer than high; frontal longer than wide, longer than its distance from tip of snout, shorter than the parietals, one preocular not reaching the frontal; three or four suboculars separating all labials from orbit; two postoculars; temporals,

1 + 2 + 3, the anterior elongate, others scalelike; supralabials, 9, separated from temporals by a noticable groove; infralabials, 10-9, five scales touching the elongate anterior chinshields which are slightly longer than the second chinshields; latter scales separated by small scales; two pairs of scales between chinshields and first ventral.

Scales sharply keeled, those on outer row are smooth; the scale formula, 28 (head), 23, 23, 20, (the median row lost one centimeter anterior to vent). Apical pits paired; ventrals, 143, the last one separated from the paired anal by two scales not in contact mesially; subcaudals, 67.

Color in life: Dark brownish-gray dorsally; five rows of black spots, the median series alternating (usually) with paired lateral spots that are a little higher than wide; below these on the border of the ventrals another, more numerous series of smaller spots varying in size. Head generally dark grayish to blackish; grayish below with parallel lines of dark brown spots tending to form two more or less continuous lines near the outer part of ventrals on the anterior two thirds of body, the area between them gray; the edges of the ventrals with some brown along their anterior edges; spotting on tail much less distinct; dark gray in subcaudal region. Scales on chin and throat more or less outlined in brown or black.

Head relatively slender not strongly differentiated from neck.

Measurements in mm: Total length, 472; tail, 113; width of head, 10; width of neck, 8.2; head length 18.4; length of frontal 4.25; width of frontal 3.0.

Remarks: Body triangular in cross-section with a rather distinct median dorsal ridge. The specimen is a female with seven eggs showing no trace of embryos. This specimen was captured some distance away from the water. The paired apical pits are relatively large and distinct over most of body and tail. There are 23 maxillary teeth, the posterior ones only a little stronger and larger than the anterior, with no diastema present.

Since this and the preceding snake occur in the same locality, it does not seem fitting to regard one a subspecies of the other. The scale formula is similar, the chief differences being in the different shape of the head, which is much wider in *anoscopus*. There is a distinct difference in the color pattern; and the somewhat elevated median line and somewhat triangular body is seemingly very different from the rounded body of *aniscopeus*; the proportionally larger temporals and parietals are significant also.

"This specimen was not found in or near water. The snake is thinner, the head longer and narrower and the snout more rounded than in our specimen of *N. aniscopus aniscopus*."

Bothrophthalmus lineatus lineatus Peters

Bothrophthalmus lineatus Schlegel, in Lichtenstein and von Martens, Nomenclator Reptilium et Amphibiorum Musei Zoologici Berolinensis, 1856, p. 27 (nomen nudum; type locality, Goldküste); Barbour and Loveridge, The African Republic of Liberia and the Belgian Congo. Cont. Dept. Trop. Med. and the Inst. Trop. Biol. and Med. no. 5, 1930, p. 784. (Cambridge, Harvard Univ. Press).

Elaphis (Bothrophthalmus) lineatus Peters, Monatsb. Akad. Wiss. Berlin, 1863, p. 287 (type locality, "Guinea").

Bothrophthalmus lineatus lineatus Loveridge, Proc. New England Zool. Club, vol. 17, May 20, 1938, p. 56 (Ganta, Republic Liberia).

This brilliantly marked serpent is represented by a single specimen EHT-HMS No. 31891 ♀. It has the following scale and other characters: rostral very narrowly visible above; internasals small, somewhat elliptic or leaf-shaped; about one third of size of prefrontals; frontal longer than wide, equal to its distance from tip of snout, as long as the parietals; inner part of the supraocular fused to the parietals; nasal divided; a longitudinal trenchlike depression, having a sharp canthal edge above in loreal region is continued behind lower posterior part of eye for a short distance; loreal large elongate, somewhat rectangular on left side, vertically divided on right side; a preocular, the upper part of which grows forward above posterior half of loreal;* two postoculars; two anterior temporals, only one, however, in contact with postoculars; two secondary temporals; seven supralabials the fourth and fifth border orbit, the upper edge of the fourth bent so as to resemble a lower preocular; seven infralabials, four touching first pair of chinshields, which are larger than the second pair; scale formula, 27 (head); 23, 21, 20. Ventrals, 194; subcaudals, 71; anal single; all scales keeled, the posterior dorsal keels forming continuous ridges.

Color: Body striped in black and red. There are four black stripes, the two median wider than the intervening red stripes, the outer stripes of about width equal to the adjoining red stripes; on the third scalerow there is a series of dashlike marks forming a more or less continuous line; the head has five lines, two through eye, a pair of lines passing above the eyes and a short frontal-occipital line. All stop and are separated from the body lines by a short diastema; a few dim dark spots on infralabials and on neck; some pigment present on the posterior subcaudals.

* This must be examined carefully since the anterior part resembles a second loreal and may be mistaken for a separate scale.

"A beautiful animal! I saw it immediately after death—the lateral and dorsal areas between the back stripes were bright "orangish" brick-red, the dorsal head color darker. The ventral surface was a lovely iridescent vermilion-pink, the tip of the tail a darker shade. The head ventrally was white with scattered orange spots."

Remarks: "This snake though harmless is held by many natives to be deadly poisonous and by others a snake that foretells death. All regard it as 'bad-bad' and wanted us to have nothing to do with it. It apparently holds a place in their superstitions much like that of the chamaeleon. Dr. Harley in his book, 'Practice of Native Medicine' describes the special medicines used for the 'red and black snake' by which I think he means *B. lineatus lineatus*."

The specimen is a female containing eight ovarian eggs.

Boaedon lineatus virgatus Hallowell

Coelopeltis virgata Hallowell, Proc. Acad. Nat. Soc. Philadelphia, (vol. VII), 1854, p. 98 (type locality, Liberia).

Boaedon virgatus Boulenger, Catalogue of the Snakes in the British Museum (Natural History), vol. 1, 1893, p. 331. (spelled *Boodon*) (synonymy); Bogert Bull. Amer. Mus. Nat. Hist., vol. 77, 1940, p. 24, (Ganta, Liberia).

Three specimens EHT-HMS Nos. 31913-31915, all females, yield the following data respectively: ventrals, 213, 211, 218; subcaudals 47, 47, 45; anal single; scalerows, 21, 23, 17; 21, 23, 17; 21, 21, 17; preoculars, 2-2, 2-2, 1-1; postoculars 2-2; preocular touches frontal, no, yes, yes; supralabials, 8-8 in all; supralabials border orbit, 4th, 5th, in all; infralabials, 9-9, 8-8, 8-8; total length in mm., 806, 350, 408; tail, 104, 43, 45. In all there are two lines on the side of the head, and a light mark on the rostral extending down across chin. The venter is lavender-gray with a line of cream in the middle. The pitting on the scales is paired throughout save an occasional scale on the outer row with a single "apical pit." No. 31913 contains six eggs.

"The color of the entire dorsal surface is glossy black. There are two sets of yellow lines on the side of head; the lateral surface of the head between the yellow lines is dark gray. Ventrally, the head is grayish white with a pinkish wash. This narrows at the neck into a cream-yellow stripe running the length of the body and widening to include the entire anal scale, and making a prominent cream-yellow spot.

"The remainder of the ventral surface and the subcaudal area is dark glossy gray. A second adult specimen which I have here for

the hospital collection has the ventral stripe peach-yellow and the immature which I send had, in life, a pink-orange ventral stripe heavily shaded with black in the posterior half of the body. All were *black* dorsally, not *brown with a gray head* as it is sometimes described."

Boaedon lineatus lineatus Duméril, Bibron, and Duméril

Boaedon lineatus Duméril, Bibron, and Duméril, *Erpétologie générale*, vol. 7, pp. 363-364 (type locality, Gold Coast).

We cannot regard this species as subspecifically related to *Boaedon virgatus* Hallowell. The two occur together and are separable on the basis of several characters. For example, markings, ventral coloration, number of dorsal scalerows, and the character of the apical pits. One specimen, EHT-HMS No. 31916 ♀ in the collection contains a rodent, *Rattus rattus* * with a total length of 352 mm.

The following characters obtain: rostral narrowly visible above; internasals subtriangular, about as wide as long, fused together anteriorly for a short distance; prefrontals about as long as wide; frontal subtriangular about four-fifths times as long as wide, touching the preocular, slightly longer than its distance to snout tip, shorter than the parietals but equal to its distance from their posterior tip; nasal completely divided, the anterior part much wider than posterior, rather narrowly separated from its fellow from the opposite side; loreal more than twice as long as high; one large preocular touching two infralabials; two postoculars, only the lower touching anterior temporal; temporals, 1 + 2 + 3; supralabials, 8-8, the fourth and fifth bordering orbit; infralabials, 9-9, four touching the first chinshields, which are larger than second pair; no scales between either pair of chinshields; eye rather small, pupil vertical; scalerows, 33 about head, 27 neck, 29 middle of body, 21 anterior to vent; scales of the median rows with single apical pits; scales of the five outer rows with double terminal pits, except outermost, which also have a single pit. Ventrals, 220; subcaudals, 49 (divided); anal single. Maxillary teeth 18, the fourth and fifth largest, diminishing posteriorly; no diastema.

Measurements in mm.: Total length, 851; tail length, 102; length of head, 29; width of head, 21.

Color markings: Above lavender to violet with a cream line from

* Identified by Mr. Philip W. Ogilvie.

rostral through the upper part of eye to lower tertiary temporal; a second line, beginning on first supralabial, to eye, and from eye to last supralabial; the anterior part of the line dim; an arched light line on rostral, the two ends directed downward across mental and first infralabial; a light line begins opposits the fourth ventral and extends to level of the 57th ventral; chin and throat grayish; venter and subcaudal region white, save for a faint pigmentation on extreme outer edges of the ventrals.

Bogert (1940) has recognized several subspecific forms in this species. He regards the typical form, (type locality Gold Coast) with two lateral white lines as occurring in Tanganyika, Nyasaland, Belgian Congo, Natal, and Angola. This large series might profitably be examined for apical scale-pit characters. Since Bogert does not comment on the color and markings of this series one presumes that they tend to agree with the type.

My specimen does not agree with the type in color markings so far as concerns the two lateral body stripes.

Chlorophis heterodermis (Hallowell)

Chlorophis heterodermis Hallowell, Proc. Acad. Nat. Sci. Philadelphia, 1857, p. 54 (type locality, Gaboon).

Three specimens of this snake are at hand: EHT-HMS Nos. 31920, 31921, 31922, all females. The following characters obtain in the three specimens respectively: Total length, in mm. 670, 541, 527; tail, 172, 142, 138; ventrals, 152, 149, 149; subcaudals, 81, 79, 79; anal single in all; supralabials, 9-9, the 4th, 5th, 6th, entering orbit in all; infralabials, 9-9, 9-9, 10-0, the first five touching the first pair of chinshields.

The scale formula is 15, 15, 11 in all. The scales are smooth but in No. 31920 pits are present on the anterior part of the neck. Some scales have 3 apical pits, others two, others one only or none. The apical pits on No. 31921 are more pronounced and extend back on neck for several inches.

In 31922 the epidermis of the scales is lost and apical pits are dim or absent. No. 31920 is uniformly black above in preservative, the side of the snout and a postorbital labial spot, white; chin and anterior part of throat yellowish to ivory-white, the yellow and black interdigitating to some extent on the sides of the neck. The ventrals are keeled laterally but the subcaudals lack keels. The maxillary teeth are 35-34 in No. 31920.

Mehelya poensis (A. Smith)

Heterolepis poensis A. Smith, Ill. Zool. South African Rept., 1847, footnote to pl. LV (type locality, Fernando Po).

The single specimen EHT-HMS No. 31884 ♂ has the following characters: rostral visible above as a narrow band; internasals wider than long; prefrontals twice area of the internasals, longer than wide, touching loreal laterally; frontal small, subtriangular, the front edge curving somewhat, distinctly shorter than its distance to the end of the snout, much shorter than the parietals, double the width of the supraoculars; parietals angulate posteriorly; nostril between two nasals; loreal longer than high; one preocular, two postoculars; temporals, 1 + 2 + 3; supralabials, 8-8, the third and fourth bordering orbit; infralabials, 8-8, the first five touching the first chinshields, which are distinctly larger than second pair; median scalerow enlarged, bicarinate, the scales somewhat hexagonal; other scales with single keels; scale formula, 19 (head), 15, 15, 15; ventrals, 240; tail broken, partly missing; anal single.

Color in preservative: Uniform lavender brown above on sides and on outer edges of ventrals. Venter and subcaudal region uniform white; edges of supralabials and infralabials white.

Approximate total length, 857 (tail broken); snout to vent, 691.

Boiga blandingii (Hallowell)

Dipsas blandingii Hallowell, Proc. Acad. Nat. Sci. Philadelphia, 1844, p. 170; *idem, ibid*, 1854, p. 100 (type locality Liberia).

Dipsadomorphus blandingii Boulenger, Catalogue of the Snakes in the British Museum (Natural History) vol. III, 1896, pp. 77-78 (synonymy).

Boiga blandingi Cope, Proc. Acad. Nat. Sci. Philadelphia 1860, 264; Barbour and Loveridge, in Contributions from the Department of Tropical Medicine and the Institute for Tropical Biology and Medicine No. V. Harvard College Press, Cambridge, 1930, p. 773 (Paiata, St. Paul's River); Loveridge, Proc. U. S. Nat. Mus.; vol. 91, p. 122. (Bromley); Proc. New England Zool. Club, vol. 17, May 20, 1938, p. 59 (Ganta, R. L.).

A large specimen EHT-HMS No. 31886 ♀ Harbel, Liberia, has the following scale characters: rostral scarcely visible above, wider than high; internasals little more than half the area of the prefrontals; frontal short, as wide as long, equalling its distance from snout tip, somewhat shorter than the parietals; eye large, prominent; nasal divided, the posterior part the larger with a depression; a loreal; two preoculars, the upper not touching the frontal; two postoculars; two anterior and two secondary temporals; supralabials nine, the fourth, fifth, and sixth bordering orbit; the seventh and eighth touching the lower postocular; infralabials, 13-13, four or five touching first chinshields, which are nearly same size as second

pair; a pair of scales between second chinshields and first ventral. Scale formula, 34 (head), 29 (neck), 23, 23, 17, 15, the median row enlarged, more than double the size of scales in adjoining row; ventrals, 266; anal divided; subcaudals, 125.

The tooth formula is $9 + 2 + 1$; $10 + 2 + 1$. The anterior teeth increase from first to fourth then are nearly equal; the two fangs stand one behind the other, their grooves deep and open the length of the tooth; a third fang, after a short diastema shows traces of a groove but is not open except at tip and base. The dental formula taken from a head of another specimen EHT-HMS No. 31945, is, $10 + 2 + 1$, $10 + 2 + 1$. In this specimen there is a suggestion of a groove but no apparent opening capable of conducting venom can be discerned on the last fang.

Measurements in mm: Total length, 2357 +; tail, 525 +; snout to vent, 183.

Color in life: "Dorsal ground color grayish tan, the diamond-shaped markings darker tan, outlined in brown. A dark brown collar one scale wide around neck. Dorsal head color a darker grayer tan than body, the mottlings dark brown; supralabials edged with some dark brown. Ventral surface of head and neck pale grayish green; five inches behind head this merges into gray with a greenish cast; at 16 inches behind head it becomes plain tan, continuing so to the tip of the tail."

Remarks: "This snake was found electrocuted at the hydroelectric plant with a large black snake. It would appear that the latter had been chasing it when they came into contact with the electric wires. The natives all insisted that the black snake eats this species."

The stomach contains three young birds, one subadult and two nestlings of *Spermestes cucullatus cucullatus*.*

Psammophis sibilans phillipsii (Hallowell)

Coluber Phillipsii Hallowell, Proc. Acad. Nat. Sci. Philadelphia, 1844, p. 169 (type locality, Liberia).

Psammophis sibilans phillipsii Loveridge, Bull. Mus. Comp. Zool. Harvard College, vol. 87, no. 1, Oct. 1940, pp. 41-44. (monographic review; bibliography)

This species is represented by two complete adult specimens EHT-HMS 31940 ♀ 31941 ♂ and two heads 31908-31917; also by four hatchlings Nos. 31909-31912 two associated with the egg. We have followed Loveridge (*loc. cit.*) in regarding *phillipsii* a subspecies of *sibilans*. The specimens so far as can be determined

* Identified by Phillip Ogilvie.

agree with the limits of variation given by Loveridge, all of the complete specimens having a single anal plate.

There is a considerable difference in color patterns in the four hatchlings. Three have the labials and many chin scales bearing black spots. In No. 31912 the lips and chin lack all black spots, the venter is darker, and the tail is lighter than in the other three specimens. This one has a combined ventral-subcaudal count that totals 283. This is considerably higher than the counts in the young with complete tails, which are 264, 269.

"This snake is, next to *Causas rhombeatus*, the commonest snake here by all means. It is seldom seen in the rainy season, but as soon as the dry season gets under way in late December or January they are found around every house or open grassy spot.

"They have most interesting breeding habits; all stories told me by planters agreeing with the one nest I saw myself. In this last case, Dr. Kessler phoned me to come to his house saying that the boys had found a 'nest of snakes.' I went immediately and found the boys of the yard crew waiting for me. They had, in hand, obviously just killed, eight large snakes of this species, and they (and he) claimed that they had found them all entwined together in this hollowed out spot in the lawn. The spot was about a foot and a half in diameter when I saw it, about one foot deep, and so badly cut by the boys' cutlasses I couldn't tell what it must have looked like before they found it. However, they had 'squashed' beside it a mess of snake eggs, how many I couldn't tell exactly. I counted, uncrushed and still in the hole where Dr. Kessler had had them leave the rest for me to see, 52 eggs. This was obviously a communal nest. Because of the mess—you can imagine eight yard boys killing eight big snakes with cutlasses—I did not examine the snakes for sex, as I later wished I had. How many eggs might eventually have been laid I don't know either. However, I have had several planters tell me of finding similar nests on their own lawns—always the estimate of the numbers of snakes present together is between eight and ten. The largest head of this species, in the specimens I sent you, incidentally, came from this 'nest.'

"As to the color, the 'greenness' of the back varies considerably in individuals, so that sometimes one calls it a 'brown snake' and sometimes a 'green snake,' varying, in other words, from a dull olive-brown to a bright olive-green, and sometimes a distinct gray-green with no tint of olive. Ventrally the green is always striking, sometimes a clear, light-green, sometimes bluish green,

sometimes, yellow-green. There is also considerable variation in the amount of orange. In all specimens there is some orange along the side of the head and on the inferior labials. In one of the specimens I sent you, you will see orange over the entire nose and mouth area with only the chinshields and the gulars white, the orange extending over the rostral, nasals, loreals and preoculars. In some specimens this orange area of the jaws is spotted with black, in others not. In some the orange continues down the first ventral plates also, and in the one you have, it runs the length of the body on the outer scalerow and above the upper (outer) edges of the ventrals, the anal area and the ventral side of the tail being quite orange. In all specimens I have seen there is some yellow or orange on the under part of the tail, in some the orange being very bright everywhere but on the vertebral row dorsally. There is also considerable variation as you see in your specimens on the black markings dorsally."

Thelotornis kirtlandii kirtlandii (Hallowell)

Leptophis kirtlandii Hallowell, Proc. Acad. Nat. Sci. Philadelphia, 1844, p. 62, *idem, ibid.*, 1854, p. 100. (type locality, Liberia).

Thelotornis kirtlandii Barbour and Loveridge, Cont. Dept. Trop. Med. No. V, vol. II, 1930, p. 773. (Gbanga, Liberia).

Thelotornis kirtlandii kirtlandii Loveridge, Bull. Mus. Comp. Zool. Harvard College, vol. 95, no. 2, Dec. 1944, pp. 149-154 (Edina and Gbanga, Liberia) (literature listing).

A single specimen (EHT-HMS 31885 ♀) has the following characters (due to an old head injury certain characters cannot be determined): head wedge-shaped; rostral much broader than high; eye large; internasals as long as wide, touching one loreal; prefrontals longer than internasals, bordering two loreals laterally; nostril in a single elongate nasal; two loreals, the second twice the length of first; one large preocular, not touching frontal; three postoculars, the lower elongate; temporals, 1 + 2; a pair of postparietals separated by a scale; supralabials, 8, the fourth and fifth bordering orbit; infralabial, 9-10, the first four touch the first pair of chinshields, which are shorter than the second pair; scale formula, 19-19, 15, the scales weakly keeled, elongate. Ventrals 178; anal divided; subcaudals 141.

Color: The head is uniform lavender (probably green in life) the labial areas somewhat lighter; neck indefinitely barred with grayish blotches growing less distinct posteriorly; most of body light lavender with dark flecks indistinctly outlining spots.

Aparallactus modestus Günther

Elapops modestus Günther, Ann. Mag. Nat. Hist., ser. 3, vol. 4, 1859, p. 111, pl. 4, fig. c (type locality "West Africa"); Zool. Record, 1864, p. 152. (figured by Jan as *Elapops petersii*); Boulenger, Proc. Zool. Soc. London, Feb. 20, 1920, pl. 293.

Pariapsis plumbeatra, Cope, Proc. Acad. Nat. Sci. Philadelphia, 1860, pp. 241-242 (type locality, Liberia).

Elapops plumbeater Cope, Proc. Acad. Nat. Sci. Philadelphia, 1860, p. 566 (contrasts *plumbeater* with *modestus*).

Our specimen, EHT-HMS No. 31892 ♀ from Harbel, Liberia, has the following characteristics:

Rostral well visible on dorsal part of snout, one and one-third times wider than high; internasals small, less than half the area of the prefrontals; frontal wider anteriorly, longer than wide, its length greater than its distance from tip of snout, distinctly shorter than the parietals; latter slender, pointed behind, fused together at tip; nasal divided, the nostril chiefly in the very small anterior part; no loreal; one preocular; two small postoculars; eye diameter less than its distance from the lip; no anterior, but two posterior temporals, the upper very large; supralabials seven, the third and fourth border orbit; fifth much the largest, broadly in contact with the parietal; infralabials six, three bordering the first chinshields, which are wider and equally as long as the second pair; upper temporals separated behind the parietals by three scales; two paired scales between second chinshields and the first ventral.

Scales smooth, without pits, in 15 scalerows throughout neck and body, the outer row a little larger than the others; ventrals, 158; anal divided; subcaudals, 35 in a single row. (Tip of tail missing.)

Color in fixative: Dorsally and laterally bluish gray, each scale with a more or less distinct dark border; head generally slightly more ultramarine; supralabials a little lighter near edge of lip; ventral surface dirty whitish, each scale with a line of grayish pigment on its anterior edge, growing more pronounced posteriorly where it may spread over the entire scale; subcaudals uniformly grayish black.

Measurements in mm: Total length, 454; tail (incomplete), 58; width of head, 9; width of body, 10; head length, 13.

Remarks: Although reported by Cope (1860) from Liberia under the name *Pariapsis plumbeatra* (*sic*) it was not included in the Barbour and Loveridge list (1930). It would appear that it is a relatively rare snake, the greater part of its range being east and south of Liberia.

The curiously pointed condition of the parietals is seemingly caused by their fusion posteriorly with the scale normally partially separating their posterior tips. The normal suture between the parietals stops at the point of fusion.

Naja melanoleuca Hallowell

Naja haie melanoleuca Hallowell, Proc. Acad. Nat. Sci. Philadelphia, 1857, p. 61 (type locality Gaboon, West Africa).

Three specimens, two young, and the head and neck of a half grown individual, are in the collection. These are EHT-HMS Nos. 31905, 31907, and 31906 respectively. The scale characters of the young respectively are as follows: ventrals, 210½, 214; subcaudals, 64, 68; scalerows, 23 (24) neck, 17, 13; 23, 17, 13, the scales smooth without pits; supralabials, 7-7, 7-7, the fifth highest, the third and fourth bordering orbit; infralabials, both 8-8; preocular, both 1-1; postoculars, both 3-3. Total length in mm., 633, 432; tail, 106, 78.

The coloration of the young (No. 31905): above blackish the top of the head a little less dark, the sides light grayish white or yellowish white, the labial sutures more or less bordered with black. At a distance of about 30 millimeters back of parietals and again at about 65 and 120 mm. many of the black scales have small yellowish dots near their anterior borders and the yellow of certain ventral bands of yellow encroaches on the outer scale rows. The chin and neck for about 57 millimeters is yellowish white; this followed by a black bar, 21 mm. long (9 ventrals) then follows a yellowish white band 25 mm. long with a single black ventral in its middle; the following black band is 29 mm.; beyond this the scales are gray black for some distance then become intense black to the end of the tail. No. 31907 shows only two yellow areas on venter separated by a black band 11 mm. wide. The sides of the neck in both show a few small black spots. Tail banded with a minute yellow band very near tip.

"This is a very common snake here, probably third in order in frequency of occurrence. The young are speckled with white when alive. I have seen four live ones in my garden at various times—specimens between one and two and a half feet in length and they all show this speckling noticeably, so that the first time I thought it was a different species until it spread its hood. The adults when alive show no white at all, but when preserved the scales separate a bit and show a little. Incidentally, the young have always, in my

experience, been more vicious than the adults, which usually try to get away although they turn and spread their hood when attacked. But the little ones usually turn and spread the hood when first disturbed and do not take advantage of a chance to escape. Also, they do not appear to be fast-moving snakes as many accounts state. I personally found a large one in my chicken house and had plenty of time to dodge his attacks and when he slipped through the fence, I was able to run around the enclosing fence and catch up and kill him on a downhill run to the rubber trees. He had not eaten and was not sluggish on that account. In motion they remind me of the common pilot black snake I grew up with in Ohio. Incidentally, they love eggs, and are often found around chicken houses, I presume mainly hunting rats, but certainly several here to my knowledge have been killed when they had been found asleep, usually under a setting duck, with three or four eggs inside."

Atractaspis corpulenta corpulenta (Hallowell)

Brachycranion corpulentum Hallowell, Proc. Acad. Nat. Sci. Philadelphia, 1854, pp. 99 (type locality, Liberia).

Atractaspis corpulentus Hallowell, Proc. Acad. Nat. Sci. Philadelphia, 1857, p. 70 (correction of type locality); Boulenger, Catalogue of the Snakes in the British Museum (Natural History), vol. 3, 1896, p. 514.

Atractaspis corpulenta corpulenta Laurent, Mem. Inst. Roy. Sci. Nat. Belgique, ser. 2, fasc. 38, 1950, pp. 40-42 (synonymy).

Description (EHT-HMS No. 31889 ♂ Harbel, Liberia): Rostral large, part visible above wider than long, the length equal to its distance from frontal, partially separating the internasals; latter a little wider than their greatest length; prefrontals shorter but wider than internasals, their common suture slightly greater than that between internasals; frontal *wider than long*, equal in length to its distance from tip of snout, a little shorter than parietals; supra-oculars very small; nasal divided, the posterior scale more than double the size of the anterior; no loreal; a very small preocular and a small postocular; eye small, separated from the mouth by a distance equal to a little more than three times its diameter; a very large anterior temporal; three secondary temporals all less than half the size of anterior; five supralabials, first small, the third and fourth border orbit; a small mental; first infralabials in contact behind mental, but separated by the first chinshields, which border lip, from the second infralabials; five infralabials; second chinshields small separated by three rows of scales; the second infralabial very large; seven scales between first chinshields and first ventral. Snout wedge-shaped, with a somewhat depressed transverse edge. Scale

formula: 28 (head), 23, 21, 17; ventrals, 190, subcaudals, 26-27, part double, part single as follows, 1 paired + 7 single + 2 paired + 1 single + 4 double + 2 single + 9 paired + 1 terminal (single), (the last paired scales separated). The terminal subcaudal is a short conical spine; anal single; scale smooth without apical pits. A row of median widened scales occupying the dorsal tail surface, about 12 in all.

A pair of functional fangs on maxillary; other teeth greatly reduced.

Color: Blackish brown above, slightly lighter on sides and venter; posterior part of tail white, the color extending more than half its length on ventral part, less than half on the dorsum.

Measurements in mm.: Total length, 619; tail, 58; width of head, 20; width of body, 21; head length to back edge of parietal, 16.

Remarks: "I have so far found or been given a total of three *Atractaspis corpulenta*, whereas, so far at least, none of the other *Atractaspis* species have been seen. My collectors tell me that another kind, similar to these but different, can be found up-country near Salala. That region has a much drier climate and more sandy soil.

"I came across a live specimen lying injured in a ditch beside the road early in the morning (apparently it had been hit a glancing blow by a passing car) . . . and observed how it behaved. It flattened its body making itself appear to be a much heavier snake than it was, and added to this effect by inflating the neck region considerably. Then the small head was curved down while the neck was reared up, giving it a very vicious appearance for so small a snake.

"All of the specimens are dull black or grey-black. Leeson's book states that they are a slaty blue."

The type description of *Brachycranion corpulentum* by Hallowell shows several differences from the generally accepted idea of this species. For example, the following are recorded for the type: scale rows about body 25; internasals and prefrontals united into one pair of scales; subcaudals single; there are but four supralabials. Laurent (1950) in his revision has not commented on this discrepancy. I am not aware of this condition occurring in any other specimen (Boulenger 1906 only suggested it might be an anomaly). It seems unlikely that there was a mistake in the count of the number of supralabials. In our specimen the tail is only partially colored white or cream, not "entirely white." Hallowell mentions

no white on the tail of the type! If these are not anomalies one suspects the possibility that the specimens referred to this name by authors subsequent to Boulenger, have applied the name to a snake different from the type of *corpulentum*. Our specimen agrees in most characters with the form redescribed by Boulenger. The second labials are fused to the chinshields leaving the combined scale bordering the lip. There are five supralabials but there are 23 scalerows such as one expects on *leucura*.

Causus rhombeatus (Lichtenstein)

Sepedon rhombeatus Lichtenstein, Verz. Doubl. Mus. Berlin, 1823, p. 106 (type locality, Gold Coast)

Causus rhombeatus Boulenger, Proc. Zool. Soc. London, 1919, pts. 3 & 4, (Feb. 1920), p. 295, text fig. 1; Barbour and Loveridge, in Strong, Cont. Dept. Trop. Med. Inst. Trop. Biol. Med., No. 5, vol. 2, 1930, p. 774.

There are seven specimens in the collection: EHT-HMS Nos. 31881-31883; 31901-31904. The last four numbers are recently hatched individuals or (one) still in the egg.

The following data are taken from EHT-HMS No. 31881: Nostril wider than high, the part visible above forming a sharp angle separating the nasals and partially wedged between the internasals; internasals longer than the prefrontals, with a narrow posterior section that extends behind nasal, and is in contact with the loreal; prefrontals much wider than long; frontal subhexagonal, the sides parallel, longer than its distance to the tip of snout, longer than the parietals; nasal scale with a transverse arm separated from its fellow by the rostral, the large nostril pierced in the larger posterior part; the internasal forms a slight overhanging shelf above edge of nasal; loreal somewhat triangular; a single preocular (on one side partially sutured); supraoculars nearly as wide anteriorly as posteriorly; one postocular in contact with an elongate post-subocular, this scale with two other suboculars form a series that separates the labials from the orbit; supralabials, 6-6; infralabials, 9-9, four touching first chinshields; the second pair of chinshields not differentiated. Scales of the eleven median rows with a well-defined keel that does not extend the whole length of the scale; scale rows, 19-19-13: temporals, 2 + 3; ventrals, 125; anal single; subcaudals, 22, the last three undivided.

A large triangular or chevron-shaped black mark reaching to anterior edge of frontal; a dark indefinite line from eye to jaw angle; on neck there are chevron-shaped spots, white throughout most of body the median spots larger, somewhat rhomboidal with a lateral indefinite series of spots on the outer scalerows; whitish on chin and

throat; most of venter lavender gray-brown the pigment forming transverse markings on each ventral; area in front of vent much lighter than elsewhere on venter but with some dark flecks; sub-caudal area immaculate; tail above with a median black line.

Data on Causus rhombeatus Lichtenstein

Number	Sex	Ventrals	Sub-caudals	Total length	Tail	Scale formula
31881	♀	125	22	460	42	19, 19(18), 12(13)
31882	♂	125	22	397	41	19, 19, 11
31883	♂	127	23	405	38	19, 18(19), 13

Variation: The subcaudals for the most part are divided but No. 31881 has three, 31882 four and 31883 five of the terminal subcaudals undivided. The suboculars two or three. The infralabials touching the first chinshields are either four or five.

Remarks: Boulenger gives the range of ventrals as 120-155. Liberian specimens have a low number (125-127) while the highest counts occur much farther to the southeast.

"This is the commonest snake here on the plantation. It is called the 'yard snake' by the house servants, because they are so often found under the houses or in the yard close by. The men engaged in clearing operations report them as numerous in the low cut-over bush of old native farms. The engineer clearing a site for a new servants' camp behind the hospital compound complained one noon that he had killed eleven of them that morning.

"I have read that this species is the greatest cause of death by snake bite in the Nairobi area, but certainly here, although common, it does not cause as many deaths as *Naja melanoleuca*, or more especially, *Bitis gabonica*. It does not behave viciously, and the white children playing in the yards often find them and call the servants to kill them."

Bitis gabonica Duméril, Bibron and Duméril

Echidna gabonica Duméril, Bibron and Duméril, *Erpétologie générale*, vol. 7, pp. 1428-1430, pl. 80 bis (type locality, Côte du Gabon).

Heads from two large specimens (EHT-HMS Nos. 31899-31900) and two smaller complete specimens are from Harbel, Liberia. The two latter yield the following data respectively: Ventrals, 129, 131; subcaudals, 32, 28; anal single; supralabials, 14 (15), 14; scale-rows at middle of body, 36, 38; total length in mm., 395, 748; tail length, 36, 46.

"This is the snake that everyone here fears—an insolent vicious animal. They are common, four medium to large ones have been

found on the lawn at our house since we came here two years ago. Those of us with small children have to think of them constantly. They are beautifully colored yet seem to be easily overlooked on a green lawn. I send a color photograph of a specimen just killed on my driveway, but unfortunately the colors appear mostly tans and browns. In life, the reddish tan markings of preserved specimens, often, though not always, have a purplish-rose cast, whereas the areas that are gray in preservative are a rich powder-blue. The tan flush under the jaw is blood-colored in life, in fact on my first specimen seen, I thought the jaw was smeared with blood.

"Our soil here is laterite—a reddish soil and the young specimen I send was just that color. The varied markings of course were present but the general coloration was that of the soil, and since the soil is gravelly the markings correspond well to the shadows caused by the small gravel, and the snake was difficult to discern."

Bitis nasicornis (Shaw)

Coluber nasicornis Shaw, Nat. Misc. vol. 3, pl. 94 (type locality, "interior of Africa").

Two specimens, EHT-HMS Nos. 31896 ♀ - 31897 ♀ yield the following data respectively: Ventrals, 122, 127½; subcaudals, 27, 28; anals, single; supralabials, 15 (16), 15 (16); scalerows at middle of body, 35, 33; total length in mm., 530, 676; tail, 71-94.

"This species is also common along and in the waterways, but although I have been given a number of smaller specimens I have never yet seen one that approaches in size the medium-sized Gaboon viper. I presume they eat fish, at least sometimes, at any rate, since two of my specimens have been taken from the natives' fish traps, where they had drowned.

"This species is even more brilliant than *gabonicus*. The dark triangle on the head, however, is always black or dark brown, not reddish as it is sometimes depicted. I doubt that *Bitis arietans* occurs here in the rain forest."

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